FROM PITS TO PLAYGROUNDS

Aggregate Extraction and Pit Rehabilitation in Toronto - A Historical Review

(Revised 1992)

S.E. Yundt, BA, MA
Supervisor, Industrial Minerals Section

D.B. Augaitis, BES
Geological Assistant, Industrial Minerals Section

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ABSTRACT

The location and extraction of aggregate resources within metropolitan Toronto has played a major role in the area's development. In this report, geological information and distribution of aggregate resources are related to the history of aggregate extraction in metropolitan Toronto. Sites of former pits and quarries are identified and present land uses are discussed in terms of four classifications: licensed, abandoned, rehabilitated, and aggregate operations not involved in extraction activities. Maps are included to show the locations of aggregate deposits and specific sites of extraction. A tour of impressively rehabilitated pits in metropolitan Toronto is described. Five areas are selected as specific points of interest to exemplify the variety of possible after uses for former pit sites.

INTRODUCTION

Construction occurs every day in large cities. Homes, offices, and other structures are built, tunnels are dug and sidewalks are laid down. The supply of building materials for construction projects is dependent upon reliable sources of sand, gravel, clay and crushed stone, collectively referred to as aggregate. Aggregate is mined or extracted from pits and quarries. The location of pits and quarries is controlled by two key factors. These factors are (a) geology and (b) cost involved in the extraction, processing and transportation of aggregate to the marketplace.

The purpose of this report is to examine the historical development of the aggregate extraction industry in metropolitan Toronto and to review the locations of former and existing pits and quarries. By investigating these excavations, it is possible to gain an insight into the various types of rehabilitation occurring within metropolitan Toronto.

Rehabilitation is a word inherently subject to a variety of interpretations. With respect to disturbed land, it generally refers to the returning of the land to some degree of productivity and to a use that is harmonious with the surrounding landscape.

Within metropolitan Toronto, over eighty pit excavations have been identified. This appears to be a surprisingly large number and one may wonder where all these sites are located. In fact, many pits are hard to recognize because of the rehabilitation that has occurred. Of the 82 sites identified, 71 have been rehabilitated into alternative land uses. Many Torontonians pass by at least one such rehabilitated pit on a regular basis without even being aware that it was ever excavated.

This report presents geological background information explaining the types and origins of various formations containing aggregate material in the Toronto area. On Map 1, sites are identified, numbered and plotted, and important aggregate deposits are delineated. The current status of these sites are described in Appendix II.

Finally, an overall review of the present physical status of these pits is presented. The pits and quarries can be categorized into: licensed, abandoned, rehabilitated and aggregate operations not involved in extraction activities. For those interested in further examination of these sites, a short tour of a few easily accessible and impressively rehabilitated pits is also described. Map 2 shows five areas selected as specific points of interest in metropolitan Toronto.

THE HISTORY OF AGGREGATE EXTRACTION IN METROPOLITAN TORONTO

In the 1720s, Toronto started out as a small French fur trading-post called Fort Rouille or Fort Toronto. Because of its strategic lakeshore location and numerous resources it soon became the capital of Upper Canada and was renamed the Town of York. By 1834, the Town of York became the City of Toronto, a Huron Indian word meaning "a place of meeting".

Among Toronto's resources, sand, gravel and clay existed in abundance. For the first period of urban growth aggregates did not serve a major function in the building of the city since most houses and roads were made of wood.

However, by the 1850's industrialization had begun and brick and stone quickly entered the construction field. As a result of repeated occurrences of fires, particularly the Great Fire of 1904, which destroyed 6 hectares of downtown property, wooden buildings were outlawed (Ross, 1974). Brick then became a popular and widely used commodity initiating rapid growth in the clay industry.

Another important use of aggregates is in road construction. However, it was not until the 20th century that new inventions and different construction techniques resulted in sand and gravel becoming indispensable ingredients in road building. In Toronto's early days, cedar block pavement was used as the surfacing material. By 1895, the condition of these roads had deteriorated to such a point that a government report stated:

"The sorry condition into which so much of the cedar block pavement in Toronto has fallen will necessitate immediate removal of many miles of streets, and it would certainly be in the public interest to pave with vitrified brick rather that to lay down the discredited blocks again" (Ontario Bureau of Mines, 1895, p.17).

Gravel roads were used to some extent in certain outlying portions of the province as evidenced by a government report in 1893 stating:

"Gravel roads such as are found in some parts of Western Ontario, when well made and kept in repair afford an agreeable contrast to the ordinary mud roads and really add largely to the value of the farm in which they pass" (Ontario Bureau of Mines, 1893, p.104).

In 1893, the Ontario Bureau of Mines Annual Report gave the general opinion on road building materials as follows: Granite was durable but expensive to keep in good repair (Photograph 1). Long distance hauling of granite resulted in high costs since much of the rock was brought in by boat. Asphalt was thought to provide a good smooth surface, but when wet, almost too smooth and slippery for horses' hooves. As with granite, asphalt costs were high, especially when sewers or other underground work necessitated the removal of the surface. In spite of these drawbacks, the first asphalt was laid on Bay Street south of King Street around 1888
(Ontario Bureau of Mines, 1893, p.106).

Undoubtedly, the most popular road building material in those days was vitrified brick. It was smooth, sanitary and above all, economical - "the price of the Canadian article (brick) at $14 per thousand". (Ontario Bureau of Mines, 1895, p.17). It's durability is obvious from the fact that some downtown Toronto streets still have a layer of bricks as part of their construction base.

Comparative costs for various road surfaces in 1895 were as follows:

"Vitrified brick on 4" concrete.....$2.25 per sq. yd.

Heavy asphalt:6" concrete, 2 1/2" asphalt.....$2.60 per sq. yd.

*Trap rock 10"...8" broken rock.....$3.65 per sq. yd." (Ontario Bureau of Mines, 1895,p.14).**

Photograph 1
Granite bricks were once a very popular road building material. In the reconstruction of Bloor Street in 1978, a layer of these bricks was uncovered as part of the old road base.

Although handmade bricks were available, it was not until 1887 that the first pressed brick was made in Ontario (OBM,1895). Prior to that, all pressed bricks were imported from the United States because it was generally believed that Ontario had no suitable clay. During the 1880s and 1890s, as sources were discovered locally, brickyards quickly became established throughout the province. By 1906, some thirty brickyards were located in the City of Toronto and its suburbs, producing over 100 million bricks per season (Baker, 1906).

* *Metric equivalents in Appendix I*

The 1930s depression was reflected in the economy of the brickyards in Toronto. Many went out of business and the total number fell to sixteen (Montgomery, 1930). By this time local clay resources in the city were diminishing and only those plants located next to large, high quality deposits remained in operation. Many clay pits in Peel County began taking business away from Toronto producers (Montgomery, 1930).

Towards the end of the 19th century, sand and gravel pits were also operating in Toronto. Initially, sand and gravel, used for construction purposes, were relatively inexpensive and resulted in small profits for the producers. However, the eventual introduction of labour-saving devices made operations more profitable.

Even in the early days, problems and complaints similar to those of today were present. As early as 1904 the impact of mining was felt "from the immense excavations in the gravel bars... where sand and gravel are used in the city", and by 1920 these operations were commonly known as "sand suckers". Cries concerning shortages and poor planning were echoed as early as 1918:

"...while some large pits are still working inside the city limits, most of them are nearing exhaustion, as the surrounding buildings prevent the extension of the worked area" (Ledoux, 1918, p.106).

The location and operation of pits has long been affected by the growth of the city itself. For example, the absence of bridges across the Don Valley forced the hauling of materials from the east end along Lake Ontario to Toronto. The construction of what is now known as the Prince Edward Viaduct was instrumental in the development of East York. As Toronto spread out in all directions, so did the location of pits. In the first decade of the 20th century, the majority of pits were located in the central core of the city. As these pits became depleted or restricted by urban buildup, aggregate operations moved outward. In 1953, Toronto became a metropolitan area and in 1967 its boundaries were expanded to the present limits. By this time operating pits were predominantly in the far reaches of the boroughs of Scarborough, Etobicoke and North York. The scope of this paper is limited to those excavations within the 1967 metropolitan Toronto boundaries.

LOCAL GEOLOGY

Introduction

Although the location and growth of urban areas is significant in creating the demand for aggregate resources, geology is the crucial factor in determining where pits are to be located. After all, sand, gravel, clay and stone can only be extracted from areas where they have been formed by nature. Aggregate resources in the Toronto area are primarily associated with surficial deposits. The underlying bedrock is the foundation for these unconsolidated deposits and is a controlling factor in their geographical distribution. A brief description of both local bedrock and surficial geology will aid in gaining a better understanding of the nature of Toronto's aggregate resources.

Bedrock Geology

The Toronto area is located within the Physiographic Region known as the Great Lakes - St. Lawrence Lowlands, which is characterized by nearly flat-lying Paleozoic bedrock composed mainly of limestones, shales and sandstones. Paleozoic bedrock formations of the Ordovician Period (500 million to 440 million years ago) cover the Precambrian Shield which is the underlying bedrock of all of Canada. During this time, the underlying rock sequence formed in the Toronto area and is discussed in reverse chronological order as follows:

1) The uppermost Georgian Bay Formation is composed of a mixture of blue-grey shale and limestone to a thickness of about 175 metres. This formation is well exposed in several brickyards including that of the Toronto Brick Company in the Don Valley.

2) The Whitby Formation is composed predominantly of black, brown and grey shales with a total thickness averaging close to 90 metres near Lake Ontario.

3) The Black River and Trenton Groups, composed of limestone approximately 155 metres thick, are the lowest and oldest formations (Hewitt and Yundt, 1971).

Surficial Geology

The Pleistocene Epoch of the Quaternary Period consisted of four glacial stages. These glacial stages started approximately 2 million years ago and lasted until about 15,000 years ago. The stages were characterized by temporary periods of melt and retreat known as interglacial periods.

In Toronto, only the last two glaciations and their interglaciation are identifiable by surficial deposits. The Illinoian Glacial Stage (500,000 years ago) can be identified from remnants of ice-deposited debris called till. These remnants are mainly found in pockets on the bedrock surface. The maximum thickness is 5 metres. The succeeding temperate climate deltaic deposits resulting from meltwaters of the Sangamonian Interglacial Stage (140,000 to 120,000 years ago) are represented by the Don Formation. This formation consists of stratified beds of sands, silts and clays of varying thickness throughout the metropolitan Toronto area.

Resting upon the Don Formation are the more extensive deltaic sands and clays of the Scarborough Formation. These cool climate sediments mark the onset of the final, or Wisconsinan Glaciation (115,000 to 15,000 years ago).

The more significant deposits of surficial material found in the Toronto area resulted from the late Wisconsinan Glacial Stage ice sheet that advanced across Toronto approximately 22,000 years ago. The glacier covered the Great Lakes region and as it melted back, it split into three lobes. With the melting of these lobes, moraines were created and meltwaters carved river valleys and spillways depositing the material that had been carried by the ice.

The Toronto area was covered by the Lake Ontario ice lobe and as it retreated from the Lake Ontario basin, glacial Lake Iroquois was formed about 12,000 years ago. This lake was created by glacial meltwaters that were dammed by ice at the Thousand Islands in the St. Lawrence Valley. The lake included the area that is now called Lake Ontario and its shoreline was several kilometres inland from that of the present Lake Ontario. Lake Iroquois was named in honour of the aboriginal people that once occupied the region (Coleman, 1932).

As the ice melted out of the St. Lawrence Valley, Lake Iroquois drained to the level of its new outlet. This brought the northern shoreline of Lake Ontario some 3 km south of the present Toronto Harbour (Freeman, 1976).

Great pressure was removed from the land as the glacier gradually melted away. The land began to rise toward its preglacial position. This caused the outlet of Lake Ontario at Kingston to be elevated, slowly damming up the lake waters to their present level. This uplift of the land continues today and is presently estimated to be about 37 centimetres per century at Kingston, relative to Hamilton (Freeman, 1976).

Glacial Lake Iroquois was a major factor in determining the extent and distribution of Toronto's aggregate deposits. The high water shoreline, trending in an east-west direction, is probably the most prominent physical feature in the city. It is easily recognized as the steep incline south of St. Clair Avenue between Dufferin and Yonge Streets.

The entire area between the former Lake Iroquois shoreline and Lake Ontario is covered by deposits from Lake Iroquois. North of these lacustrine or lake sediments the surface of metropolitan Toronto is almost exclusively glacier-deposited Halton till. The abandoned glacial lake shoreline and built-up bars and spits outlined in Map 1 have been major sources of sand, gravel and clay, all necessary for Toronto's growth from a village to a large metropolitan area.

FROM PITS TO PLAYGROUNDS IN THE TORONTO AREA

Introduction

Over 80 pits have been in existence in the metropolitan Toronto area throughout its history. The majority of the pits were located on deposits of clay or sand and gravel. Most are now unrecognizable as pits because they have been rehabilitated to other productive land uses.

All pit sites identified in the city are plotted on Map 1. Those mentioned in this section are discussed in terms of

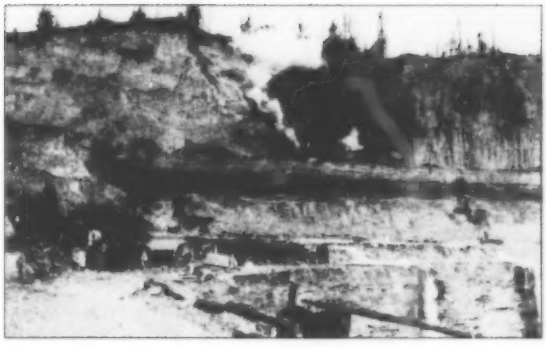
the deposit excavated. In 1932, Arthur Coleman described the various glacial and interglacial deposits in the Toronto vicinity.

Clay Deposits

The demand for clay in Toronto was used primarily for brick-making. There are a variety of types of clay available, each resulting from a different geologic origin. One common type of clay is called varved clay. Varves are pairs of seasonally deposited, graded lacustrine layers in a glacial lake or other body of still water in front of a glacier. A glacial varve includes a lower "summer" layer consisting of relatively coarse-grained, light-coloured sediments produced by rapid melting of ice in the warmer months which grades upward into a thinner "winter" layer, consisting of very fine-grained, often organic, dark sediment slowly deposited from suspension in quiet water while the streams were icebound.

There are two major deposits of varved clays in the metropolitan Toronto area. The first extends west from the Don River into the University of Toronto area and the other occurs in the mouth of Mimico Creek, as is indicated on Map 1. Some of these clays have a high lime content and bricks manufactured from them fire to a buff (yellow) colour. Don Valley brickyard, now known as Toronto Brick Company (Site 45), was the largest operation using this particular type of clay. The location of this company is an excellent example of how proximity to market can reduce transportation costs. The location also affords an ideal opportunity for viewing the face of a pit, where the sequence of glacial history is exposed. Built in 1889 by Taylor Brothers (Montgomery, 1930), Toronto Brick Company expanded to the point where it produced a range of clay products (Photograph 2). Currently, the site is non-producing although still licensed under the Aggregate Resources Act, 1989. The licence is issued to the Metropolitan Toronto and Region Conservation Authority.

At Yonge Street and Pears' Avenue, a large operation, Pears' brickyard (Site 35), was also using clay from this deposit around the turn of the century. The material at this location is quite different from other varved clays excavated in that it includes both red and buff-burning clays. The more desirable red-burning clay is derived

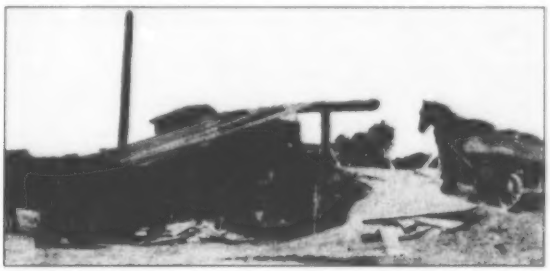


Photograph 2
Quarrying operations at Don Valley brickyard in 1932 were very labour intensive using horses, carts and steam powered equipment.

from material that has been leached of its lime (Coleman, 1932). At Pears' brickyard, both clays were dug and put in separate piles. By 1905, the yard employed two men, one boy and a horse to handle the annual output of four million bricks (Baker, 1906, p.110). Today this area is Ramsden Park, a green escape from the densely packed buildings around it. The pit was excavated on several levels which are still visible. The upper two levels contain a park with tennis courts, an outdoor ice rink and a baseball diamond. The lowest level is a Toronto Public Works Yard and Office built in 1935. New highrise apartment buildings at the southwest corner of the pit represent the most recent stage of rehabilitation (Photograph 3).

Photograph 3
Ramsden Park is the outcome of rehabilitation at Pears' brickyard which was operating in the beginning of the century. It now offers space for baseball, hockey, tennis and other recreational activities.

One more significant lacustrine clay deposit is in the Dawes Road - Chapman Avenue area. This is the location of the ancient Don Bay of glacial Lake Iroquois and the deposit appears to be composed of deep water clays rather than varved clays. Although no pits were reported in 1906 by Baker, Montgomery in 1930 identified four brickyards operating here. The deposit is four metres thick consisting of about one metre of red-burning clay and roughly three metres of sandy, buff-burning clay. In 1930, the four brickyards combined were producing 10 million bricks (Photograph 4). Today the area is occupied by a series of apartment buildings, single family dwellings on Munford Crescent, George Webster Public School and Taylor Creek Park (Site 64, 65).



Photograph 4
Simple soft-mud plant at Chapman Brick Company, Dawes Road operating in 1930. In a five month season, the plant produced 2 million bricks.

In the Gerrard and Queen street area, between Leslie Street and Greenwood Avenue, is a clay bed thought to be deposited during an early stage of Lake Iroquois. This five metre deep deposit is composed of buff-burning clay. Greenwood Park (Site 54) is now located in this area, exemplifying the rehabilitation that has occurred. The six hectare park provides swimming, baseball, skating and football facilities. The edges of the pit are still evident but have been sloped, seeded and planted with trees.

Other stratified clay deposits in Toronto have been deposited by river flow or by the movement of glacial ice sheets. About one kilometre north of Site 54 there is a major clay bed in the Greenwood Avenue-Canadian National Railway tracks area. In terms of percentage of material removed, this has been the most extensively worked clay bed in the city.

At this site much of the glacial till deposited by the glaciers was removed by the wave action of Lake Iroquois and a comparatively thin layer of sand was left on top. Beneath this is the interglacial clay deposit averaging a depth of 18 metres. The top layers of the peaty clay have been leached of any lime and, consequently, the brick burns to the bright red colour mentioned previously. Price's, Logan's and Wagstaff's brickyards were a few of the many yards located on Greenwood Avenue at the end of the 19th century (Baker, 1906). Their pits were located north of the Canadian National Railway tracks on the banks of a ravine about 30 metres deep. The clay was dug from the bottom of the ravine on both steep banks (Baker, 1906). These pits have long since been closed down and rehabilitated (Site 51). The ravine has been landscaped and now serves as a green space. On the west side of Greenwood Avenue is the present site of the Toronto Transit Commission's subway yards (Site 50). The shape of the former pit is clearly evident and the depression offers protection to the trains that are parked and serviced here (Photograph 5).

Photograph 5
Site of the Toronto Transit Commission's Greenwood subway yard. The depression offers protection to the subway cars parked and serviced here.

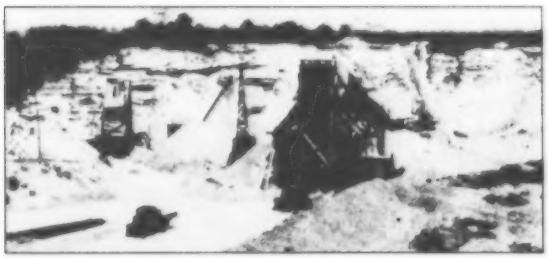
Sand and Gravel Deposits

Sand and gravel are resources in continuous demand for all aspects of construction. Because they are both glacial and interglacial in origin, there are numerous sources in the Toronto area.

Probably the most important aggregate deposits in the metropolitan Toronto area are the gravel bars formed from materials of the glacial Lake Iroquois shoreline. Two bars, one in the west and the other in the east part of the city, were easily discernible ridges in the 1800s. Since that time, much material has been removed so that the landforms are no longer distinct and, in several cases, the ridge has disappeared and been replaced by a depression.

These gravel bars were built up in much the same way as the Toronto islands are being formed today. Storms causing prevailing currents towards the west eroded the Lake Iroquois shoreline, depositing the material in gravel bar formation across the mouths of ancient bays. Two glacial rivers flowed into Lake Iroquois in approximately the same locations as the present day Humber and Don rivers. The sands brought down by these rivers filled up the bays south and west of the bars (Coleman, 1932).

In the west, glacial Lake Iroquois reached five kilometres up the present Humber Valley creating a delta several kilometres wide. The gravel bar at the mouth of this glacial river is one-half kilometre wide, and three kilometres long, along St. Clair Avenue from Scarlett Road to Old Weston Road (see Map 1). The Davenport Gravel Bar, as it was known, was a six metre ridge sparsely covered with oak and pine in the late 1800s. Since that time, large quantities of material have been hauled away. Sand and gravel pits were flourishing by the early 1900s and much excavation has gone on at the northwest corner of the gravel bar and beyond it.



Photograph 6
Scarlett Plains sand pit, east of Lambton Golf Course is now part of a housing development. In 1932 it was a bustling and productive extraction site as motor vehicles began replacing the horse teams.

Photograph 6 illustrates the activities that went on in the Scarlett Road area in 1932 and the aerial photograph (Photograph 7) shows that even more pits were present over 20 years later.

Photograph 7
In 1954, extraction activity at Jane Street - Alliance Avenue was still in full swing. Several sites which are now rehabilitated are identified on the aerial photograph.

Smythe Park (Site 10), extending for 1.5 kilometres along Black Creek east of Scarlett Road, is one example of an impressively rehabilitated former gravel pit. In 1977, Conn Smythe and the Borough of York were presented with a rehabilitation award. The plaque is awarded annually by the Aggregate Producers' Association of Ontario (Photograph 8). The intent of the award is to stimulate rehabilitation work by formally recognizing outstanding examples of rehabilitation.

Photograph 8

Aggregate Producers' Association of Ontario Rehabilitation Award at Smythe Park. This award was presented to Mr. Conn Smythe, the aggregate producer and Mr. White, Mayor of the Borough of York on June 16, 1977.

The park has residential areas built up along the sides. It can be seen that the pit was particularly deep around the Edinborough Court vicinity (Site 11). In the centre of the park, a marshy environment has been left and is being protected as a wildlife habitat (Site 10). At the east end of the park there are facilities for swimming, baseball and tennis.

The nearby Jane Street - Alliance Avenue site has also been rehabilitated to a shopping centre and a housing development (Site 12). Across the street the Black Creek Flood Control Channel is similarly located on a former pit site (Site 13).

Several other pits have existed along Alliance Avenue and in some cases the old pit is still distinguishable (Site 14).

Photograph 9

Partial view of the rehabilitation at Smythe Park. The rehabilitation of this former gravel pit includes recreational facilities such as a playground, tennis courts and a swimming pool.

At the end of this street at Weston Road is the Borough of York Stadium (Site 15) built into the edge of an old pit face. These and probably several other unrecognizable sites on the Davenport Gravel Bar have served Toronto well in providing essential construction resources (Photograph 9).

The other major gravel bar is in the east end of Toronto, in the bay of the glacial Don River in Lake Iroquois. This gravel bar is more extensive than the Davenport Bar, reaching almost 6.5 kilometres in length and averaging 0.8 of a kilometre in width. The deposit starts at Birchmount Park, crosses Danforth Avenue just east of Woodbine Avenue and continues west to Coxwell Avenue ending at the Toronto East General Hospital (Coleman, 1932).

In the late 1800s and early 1900s excavations were numerous north of Kingston Road where pits such as those of York Sand and Gravel Limited were producing more than 100,000 tonnes of gravel per year. In 1918 A. Ledoux of the Ontario Bureau of Mines noted that teams of horses were used to haul the sand and gravel over to Yonge Street where much of the urban construction was taking place. With a team of horses making only two round trips daily and costing $7 a day to rent, transportation costs escalated the price of pea gravel from $1 a cubic yard (three-quarters of a cubic metre) at the pit to $2.30 a cubic yard delivered.* The introduction of the motor truck, making five trips daily, cut transportation costs considerably (Ledoux, 1918).

Much of this aggregate was removed between Main Street and the Birch Cliff community and several examples of rehabilitation occur here. Blantyre Park (Site 60) shown in Photograph 10 was once a two hectare pit but now it provides the neighbourhood with open space and recreational facilities. Several of the old pits have become sites for schools, including Blantyre Public School (Site 58) and Neil McNeil School (Site 57). Site 57, at the edge of the gravel bar at Kingston Road and Victoria Park Avenue, also includes shopping and residential sections. This gravel bar was never fully used. Much of it was built over, preventing further extraction.

Aside from the large gravel bars, Toronto also used sand and gravel deposited by direct ice action and by water

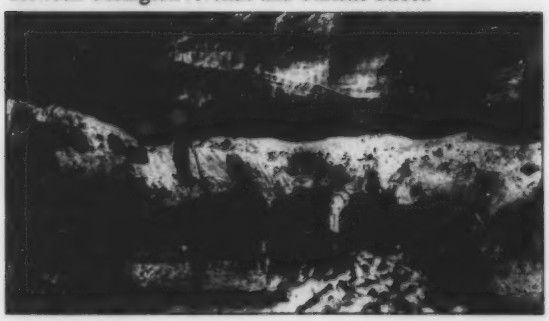
* *See Metric Equivalents, Appendix I*

Photograph 10
Blantyre Park is one of many rehabilitated pits on the eastern gravel bar. A swimming pool, baseball diamond and playground are some of the recreational features of this park.

running off glaciers. Sites shown on Map 1 inland from the Lake Iroquois shoreline appear to be excavations of Halton till. Actually, these pits are in deposits of sand and gravel created by rivers emptying into the glacial lake — but overlain by succeeding deposits of Halton till (Sites 1, 2, 36-41, 55, 76 and 77).

Site 82 is an abandoned pit located in an area primarily used for agriculture. The excavation in this instance is of a stratified ice-contact deposit called a kame. This formation of sands and gravels is built up along meltwater channels.

An important interglacial deposit is in the Bloor Street area between Ossington Avenue and Christie Street.



Photograph 11
Shaw Street sand pit was excavated in a 24 metre deposit of crossbedded, sandy materials. Willowvale Park now occupies this site.

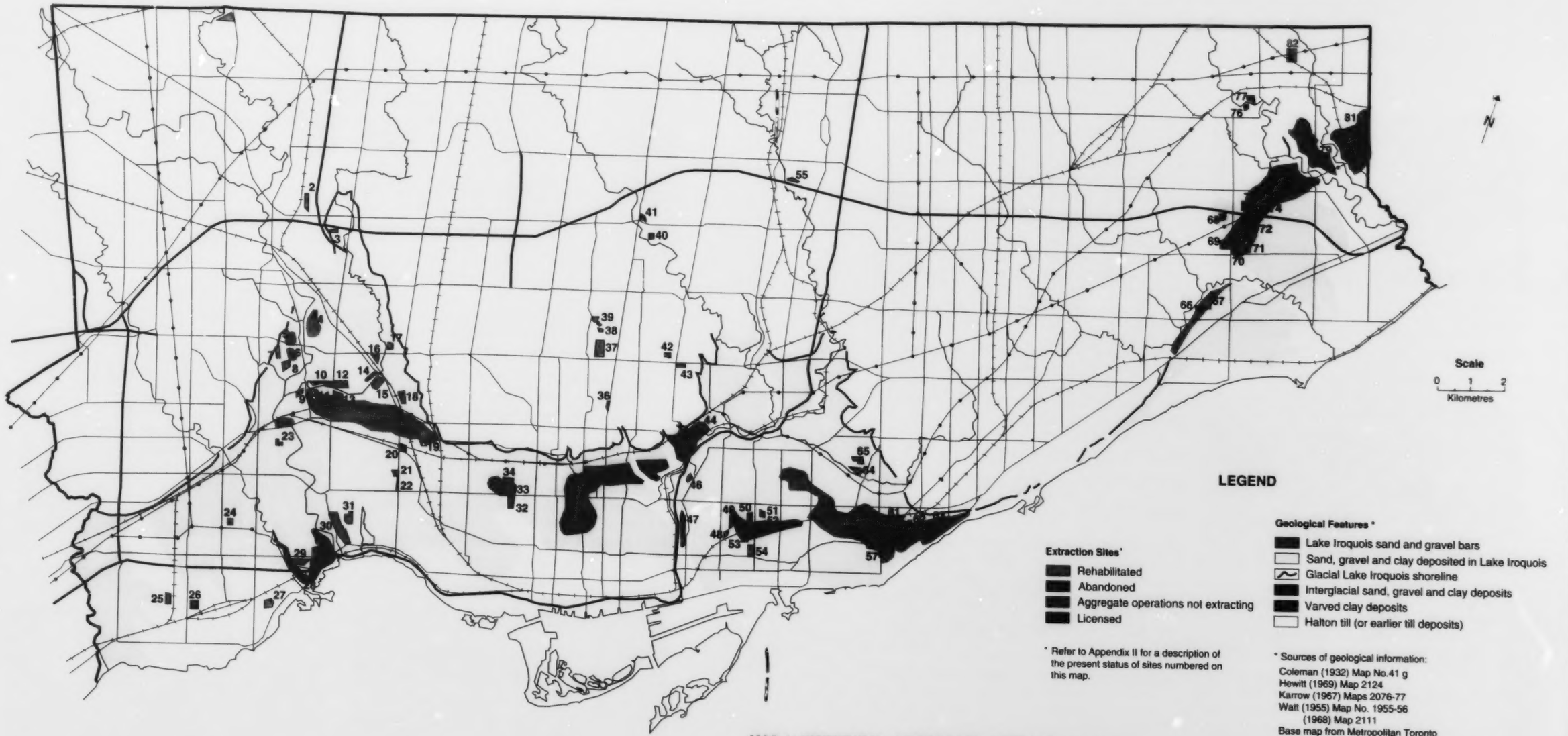
It is believed that just prior to the last major glaciation a powerful river flowed "which sometimes changed its course, cutting away its bed in places and filling up the space with a different arrangement of strata" (Coleman, 1932, p.25). The river filled up an interglacial river valley with strongly crossbedded deposits of sand and gravel. These deposits, some as thick as 24 metres, were used as building materials for Toronto's growth in the early 1900s.

Today on the south side of Bloor Street at Christie Street stands the modern Bickford High School built on the floor of one of the depleted pits (Site 32). Behind the school is Bickford Ravine. The large size of the willow trees on the slope indicates the length of time since extraction took place (Photograph 12).

Photograph 12
Bickford Ravine with Bickford High School in the background. The shape of the pit is conducive to sports such as baseball, soccer and football, which are played here.

Across Bloor Street to the north, another pit has been converted to recreational use (Site 33). This area has long been known as the "Christie Pits". Willowvale Park is the area's official name and as well as providing a swimming pool, badminton courts and floral display, it is also the home of the Toronto Maple Leaf Inter-County Baseball Team. Further to the north, along Pendrith Street is another old pit, now built over with houses (Site 34).

The majority of areas that have been described so far are found in the central part of Toronto and were excavated many years ago. However, there has been some significant


N
Scale
0 1 2
Kilometres
LEGEND
Extraction Sites*
Rehabilitated
Abandoned
Aggregate operations not extracting
Licensed
* Refer to Appendix II for a description of the present status of sites numbered on this map.
Geological Features *
Lake Iroquois sand and gravel bars
Sand, gravel and clay deposited in Lake Iroquois
Glacial Lake Iroquois shoreline
Interglacial sand, gravel and clay deposits
Varved clay deposits
Halton till (or earlier till deposits)
* Sources of geological information:
Coleman (1932) Map No.41 g
Hewitt (1969) Map 2124
Karrow (1967) Maps 2076-77
Watt (1955) Map No. 1955-56
(1968) Map 2111
Base map from Metropolitan Toronto
Planning Board (1974) Map No.5-61

MAP 1: HISTORICAL AGGREGATE EXTRACTION AND REHABILITATION IN METROPOLITAN TORONTO

Photograph 13
Willowvale Park, commonly known as "Christie Pits", provides for several recreational activities in a densely urbanized area.

activity in Toronto's suburbs as well. This is true especially in Scarborough where some excellent glacial Lake Iroquois beach sand and gravel deposits occur.

In Scarborough, several of the extracted sites that are in rapidly developing areas have been rehabilitated within the last 20 to 30 years. For example, a housing subdivision and West Hill Playfield (Site 67) occupy a former gravel pit in the vicinity of Kingston Road and Lawrence Avenue. Other examples of rehabilitation occur to the east of Morningside Avenue, north of Highway 401. Because of minimal urban development a variety of types of rehabilitation has occurred. Morningside Business Park (Site 73) and an open naturally revegetated field (Site 74) are examples of different types of rehabilitation. The location of Miller Paving Ltd. and MacAsphalt Industries Ltd. (Site 75) in an old extraction site is another example of an alternative land-use. Several depleted areas in this vicinity were metropolitan Toronto landfill sites (Sites 71, 72, 80, 81).

Rehabilitation has also occurred as a secondary consideration where development has occurred and a pit gets rehabilitated in the process. Such was the case in the building of the Metropolitan Toronto Zoo where at least two old gravel pits were incorporated into parking facilities. It would be next to impossible to find the exact location of these pits today (Sites 78, 79).

Miscellaneous Deposits

Because of the complexity of surficial geological formations created during the Pleistocene Epoch, some unusual aggregate deposits exist. One such deposit occurs at the intersection of Bayview Avenue and Eglinton Avenue. During a temporary withdrawal of the Wisconsinan ice sheet, sands and clays were deposited in this area, likely in short-lived lakes or ponds. When the succeeding Halton till was laid down, these deposits were covered but left intact.

Leaside High School and Howard Talbot Park (Site 43) have been developed at the site of one excavation of this material while Roehampton Park (Site 42) is the present land use of another.

Summary

In attempting to connect the geology of metropolitan Toronto to the location of extracted aggregate sites, many rehabilitated pits have been described. They represent a cross section of the unlimited possibilities for rehabilitated land use that can be created.

THE PRESENT STATUS OF EXTRACTED SITES

Introduction

Few people realize the impact mining has had on metropolitan Toronto because rehabilitation has made most pits difficult to recognize. In the survey that was completed, the 82 extracted sites identified in Toronto were classified according to their present status. The categorical breakdown is given in Table 1.

Table 1 — Classification of Extracted Sites

Classification	Number of Sites	Percentage of Total
Rehabilitated	71	87
Licensed	1	1
Abandoned	9	11
Aggregate Operations not Extracting	1	1
Total	**82**	**100**

Rehabilitated

As previously mentioned, the majority of rehabilitated sites are located around the central core of the city. In non-urban areas, it was originally perceived that land values were not usually high enough to make rehabilitation profitable and only when land was a premium was rehabilitation common. As urban expansion continues, these parcels of land will eventually be rehabilitated.

A breakdown of all rehabilitated sites according to land use is presented in Table 2.

Table 2 — Present Land Use of Rehabilitated Sites

Land Use	Percentage of Total Occurrence
Recreation	40
Residential	22
Educational Institution	13
Commercial	7
Sanitary Landfill	6
Industrial	6
Sloped and Seeded	6

This table indicates the type of land use that is the outcome of rehabilitation.

More than half of all rehabilitated pits are in public ownership, either as parkland or school property. This suggests that public authorities have taken the responsibility of cleaning up and using these sites. The uneven topography of pits makes them appropriate sites for parks, especially when green space is often in short supply.

Residential is the next most common use of depleted pits, ranging from high rise apartment buildings in downtown Toronto to single family units in Scarborough and North York. Some commercial uses such as shopping malls (Site 12, 57) do exist and a few former pits have become sites for industrial activity. Examples include the Ontario Food Terminal (Site 29), Advance Wrecking Company (Site 18) and Christie's Bread Division (Site 28).

Some of the pits in the older sections of the city have been utilized for housing or commercial developments. Many of these buildings which are 70 or 80 years old, indicate a time span over which rehabilitation in the urban areas has been a routine or ongoing occurrence.

As previously mentioned, some abandoned pits were used for sanitary landfill sites. As least two pits were filled as part of the Beare landfill site in Scarborough (Sites 80, 81; Photograph 14). Two other landfill operations were located at Morningside Drive and Highway 401 (Sites 71, 72). Landfill activities have been completed creating a large hill. The area is now managed as Military Trail Park by the Scarborough Parks Department. South of this, on property owned by the University of Toronto, is a pit partially filled in with landfill and another containing water. Although much has already been done, this entire site including the two pits and the landfill area could use further landscaping to turn it into an attractive and more enjoyable recreation area.

Photograph 14
Beare landfill site in Scarborough is located on several former pit sites.

Of the 73 rehabilitated sites, six per cent have been seeded and sloped but are not being used for a particular purpose at this point. Undoubtedly that will change as demand for land increases.

Licensed

Since the enactment of the Pits and Quarries Control Act, 1971, all active extraction sites in designated areas of Ontario require licences. The intent of the act was to encourage the industry to accelerate rehabilitation and minimize the environmental impact of pit and quarry operations, while still providing for the province's aggregate needs.

In 1990, this act was replaced by the Aggregate Resources Act, which provides for even more careful control of aggregate extraction and rehabilitation activities by operators.

Currently, there is only one licensed site in the metropolitan area (Site 45). The site has 12.5 hectares of licensed property in the Don Valley, one kilometre north of Bloor Street. Clay and shale were once removed by the Toronto Brick Company from a 58 metre pit face for an annual production of 45 million bricks. Ultimate rehabilitation plans include a lake on the pit floor, landscaped slopes, and use of the site as a recreational facility. The property now belongs to the Metropolitan Toronto and Region Conservation Authority and looks similar to that shown in photograph 15.

Abandoned

Nine abandoned sites in Toronto still require rehabilitation before an alternative land use can follow. Four of these sites (68, 76, 77, 82) are in the far northeast portion of Scarborough. It is probable that these sites will be rehabilitated and incorporated into the encroaching urban land use framework.

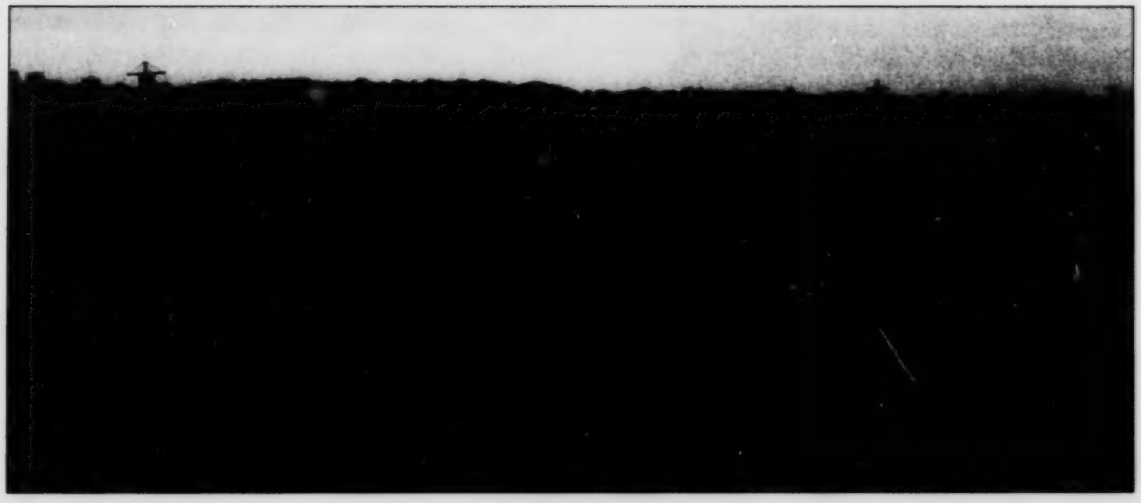
Two more abandoned sites are located in built up areas of the city (Sites 66 and 70) and are very small pockets where the former pit is quite obvious and unattractive. In both cases the pit face is steep, partially vegetated and prone to erosion. As well as being visually unattractive, an unstable slope can be a threat to safety. Because these sites are in rapidly developing areas, their rehabilitation is inevitable.

Another abandoned site is in the west end of metropolitan Toronto at the Mimico Reformatory (Site 26). Inmates of the reformatory once worked at the government controlled brickyard. The deposit was depleted and the pit used to store material brought to the established plant.
This property has since been severed from the reformatory site and is lying idle.

The last two abandoned sites to be mentioned (Sites 61 and 4) are much larger than the others and exhibit the processes of natural revegetation. One of these sites at Gerrard Street and Victoria Park Avenue is shown in Photograph 16.

Aggregate Operations not Extracting

This last category involves one site (Site 75) still involved in related aggregate operations (asphalt and concrete plants) but not operating under or requiring an Aggregate Resources Act licence.



Photograph 15
This is an overall view of the former Toronto Brick Company site. The pit located in the background to the right is still licensed; however, it is no longer producing.

Photograph 16
Natural revegetation taking its course in an abandoned pit at Gerrard Street and Victoria Park Avenue (Site 61).

Summary

Appendix II contains a list of all sites and their present uses. This report attempted to identify as many former pit sites as possible within the metropolitan Toronto boundaries. Any omissions are either due to a lack of reference made to these sites in the historical publications researched or a result of oversight. In some cases, elaborate rehabilitation has rendered it impossible to identify pit sites. Also, less accessible locations or smaller pit sizes may have resulted in pits being overlooked. It is believed that all large, significant excavations have been included.

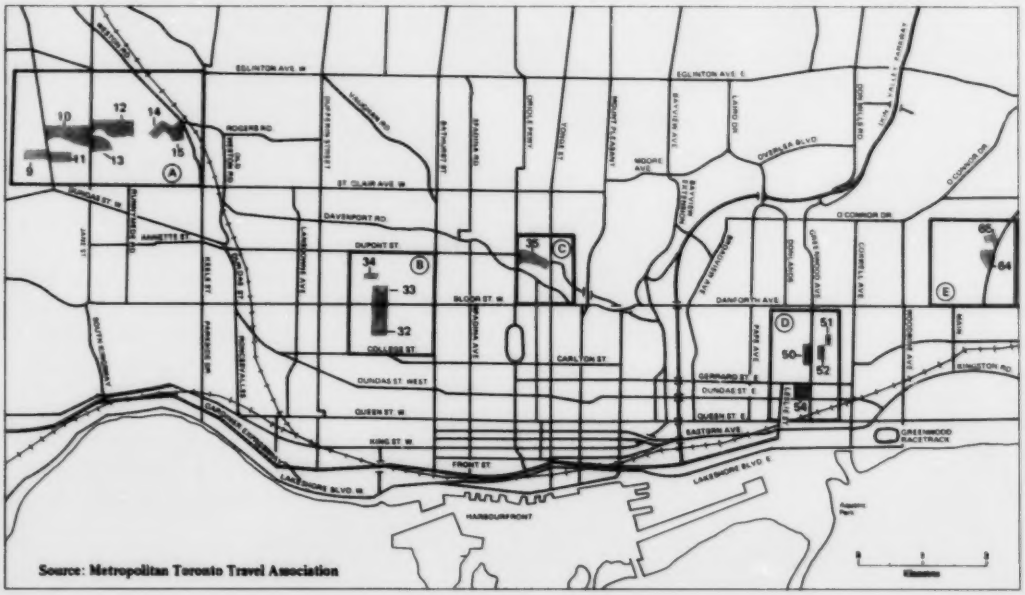
The argument that aggregate extraction is only a temporary land use has been strengthened by the examples cited in this study. It would be safe to assume that any remaining abandoned pits in metropolitan Toronto will be rehabilitated in the near future, completing the transition of extracted sites to land uses in harmony with the urban surroundings.

METROPOLITAN TORONTO REHABILITATED PIT TOUR

Over 65 pits excavated in metropolitan Toronto's aggregate deposits have been rehabilitated to fulfil many of the city's needs. These pits have been transformed into parks, golf courses, school yards, and residential, commercial and industrial developments. The following five areas have been selected as points of interest keeping in mind their accessibility and their impressive and beneficial after uses. The tour can be conducted by automobile or public transit and all sites are shown on Map 2.

Metropolitan Toronto Rehabilitated Pit Tour

Map 2 – A – Area
9 – Site number



Source: Metropolitan Toronto Travel Association

Area A - Scarlett Road Vicinity

Site 9. Site 9 is the Lambton Golf and Country Club on the west side of Scarlett Road north of Dundas Street. Small amounts of material were removed from the golf course near the river, have been made challenging for golfers.

Site 10. At the entrance to Smythe Park and along the northern boundary another residential area built on the opposite edge of the pit can be observed.
The development is described in detail on page 7 of this report. In the center of the park a marsh ecosystem has been left unchanged and is being protected as a wildlife area. At the east end of the park, there is an intensive recreation area serving the York Baseball Association, York Smythe Tennis Club and the Smythe swimming pool. The plaque commemorating the presentation of the rehabilitation award is mounted on a large boulder located in the eastern extremity of the park, adjacent to the tennis courts.

Site 11. Across Scarlett Road on the east side of Edinborough Court, a residential area has been built up against the pit face. This specific portion of the pit was very deep with the face approximately 12 metres high.

Sites 12 and 13. The eastern edge of Smythe Park borders on Jane Street. Across the street, there are two more extracted areas. On the northeast corner of Jane Street and Alliance Avenue a small shopping center and several houses now occupy an old pit.

Across Alliance Avenue is the Black Creek Flood Control Channel, managed by the Metropolitan Toronto and Region Conservation Authority. The southern bank of this flood channel was once extracted and has since been effectively landscaped and seeded.

Sites 14 and 15. Where Alliance Avenue becomes Humber Boulevard, a pit face will occasionally be visible to the north between residential and commercial developments. Just before Weston Road, one can see to the south the Borough of York Stadium, built at the edge of the pit floor.

Area B - "Christie Pits" Vicinity

Sites 33 and 34. "Christie Pits" is the common name for what is officially Willowvale Park and Bickford High School at Bloor and Christie Streets. Willowvale Park, north of Bloor Street, is the home of the Toronto Maple Leaf Inter-County Baseball Team. The park is a multiple use recreation area providing facilities for winter activities such as skating, hockey and tobogganing. It is also the site of the Alex Duke Memorial Pool, badminton courts and children's play area. All are actively used during the summer season. Another shallow rehabilitated pit is located one block north of the park on Pendrith Street. For over 60 years, this site has had houses on it and is now part of a bustling multicultural neighbourhood.

Site 32. South of Bloor street the third pit in this sand and gravel deposit is occupied today by Bickford High School and the Bickford Ravine with its recreational facilities. The large size of the willow trees on the rehabilitated slopes indicate how many years have passed since extraction.

The parks in this vicinity are welcome open spaces in this heavily populated section of the city. These parks probably were not planned. Had it not been for the pits being excavated, these green spaces would not be here today.

Area C - Ramsden Park Vicinity

Site 35. Just opposite the Rosedale subway station on Yonge Street is Ramsden Park. Almost a century ago, this area was the site of Pears' brickyard and clay pits which were producing four million bricks per season. The pit was excavated on several layers which can still be seen today. The highest levels on two sides of the park are occupied by high rise apartment buildings and older homes. On the middle level is Ramsden Park. The park provides tennis courts, a hockey rink, a baseball field and plenty of green grass for leisurely strolls. Finally on the lowest levels, completing the rehabilitation scheme, is the Toronto Public Works Yard and Office, built in 1935.

Area D - Greenwood Avenue and Gerrard Street Vicinity

Sites 50, 51, 52 and 54. On Greenwood Avenue, two blocks south of Danforth Avenue, is a large interglacial clay deposit. Much material has been removed from several pit excavations in the vicinity. On the west side are the Toronto Transit Commission's Greenwood subway yards. The pit, being a depression, offers convenient protection to the subway cars, which are parked and serviced here.

Across Greenwood Avenue at the end of Mountalan Avenue, is Feldstead Park. When this pit was in operation, the clay was dug from the bottom of the ravine and moved to the brickyard 30 metres above. The ravine has been filled in, landscaped and now serves as green space. Directly across from the subway yards on Feldstead Avenue is St. Patrick Catholic Secondary School where another rehabilitated pit is used as a playfield.

Further south on Greenwood Avenue at Gerrard Street is Greenwood Park (Site 54), totally unrecognizable as the large clay pit it once was. The six hectare park provides swimming, baseball, football, soccer and hockey facilities. The edge of the pit is still evident but has been sloped, seeded and planted with trees.

Area E - Dawes Road Vicinity

Sites 64 and 65. The fifth and final selected site is a four metre lacustrine or glacial lake deposit north of Massey Creek on Dawes Road. On the west side of Dawes Road several clay pits which produced a total of 10 million bricks in 1930 have been rehabilitated. The first is located in Taylor Creek Park where a small corner of the park was once excavated. The apartment buildings on the northern edge of the park are also part of the new landscape. The second site is two blocks to the north on Chapman Avenue. The old pit extending west from Cedarcrest, now includes George Webster School, a parkette and housing along Munford Crescent.

The sites described in this tour are of the most notable examples of pit reclamation in metropolitan Toronto. They serve to portray the endless possibilities that exist in transforming a pit or quarry to compatible local uses.

CONCLUSION

This report illustrates the important role aggregate extraction has played in the development of metropolitan Toronto. The economic advantages of having a large supply of natural resources close to the market are generally appreciated. However, it is the significance of the physical impact that has often been overlooked, or alternatively, been the focus of critical public reaction. In fact, the location of pits has no doubt influenced the direction and timing of the city's growth. This has in many ways brought positive outcomes, often actually enhancing development potential.

The large number of rehabilitated pits verifies that extracted areas do not have to become dead wastelands but can quite easily be redeveloped to serve the needs of the community in some alternate capacity. The existence of pits has in the past, forced urban sprawl to develop around resource - rich land. After completion of extraction, these scattered parcels of land were ultimately available for careful planning. A result has been the incorporation of numerous public use areas in predominantly asphalt and concrete landscapes. Rehabilitation, although a key political issue today, has been occurring in this fashion for numerous decades. That there are over 80 extracted sites within metropolitan Toronto substantiates the fact that we can live in the presence of pits if they are planned and managed with thoughtfulness and foresight.

APPENDIX I

Selected Metric Equivalents

Length

1 metre	39.370	inches
1 metre	3.281	feet
1 metre	1.094	yards
1 kilometre	0.621	mile

Area

1 sq. metre	1.196	sq. yard
1 hectare	2.471	acres

Volume

1 cu. metre	1.308	cu. yard

Mass

1 tonne	1.102	(short) ton

APPENDIX II

The Present Status of Sites of Historical Aggregate Extraction

Site No:	Description
1. Rehabilitated	- housing subdivision
2. Rehabilitated	- industrial development with buildings along the face of the pit
3. Rehabilitated	- Blackwood Hodge; storage for heavy equipment
4. Abandoned	- natural revegetation has taken place
5. Rehabilitated	- sloped, graded, and seeded; future site of condominium development
6. Rehabilitated	- apartment buildings
7. Rehabilitated	- Buttonwood Public School
8. Rehabilitated	- housing subdivision
9. Rehabilitated	- Lambton Golf and Country Club
10. Rehabilitated	- northern edge of Smythe Park
11. Rehabilitated	- housing
12. Rehabilitated	- shopping complex and housing
13. Rehabilitated	- Black Creek Flood Control Channel
14. Rehabilitated	- housing and commercial development

15. Rehabilitated	- Borough of York Stadium and Archbishop Romero Catholic Secondary School
16. Rehabilitated	- West Keelesdale Park and commercial buildings
17. Rehabilitated	- Coronation Park
18. Rehabilitated	- industrial and commercial buildings
19. Rehabilitated	- housing
20. Rehabilitated	- Canadian Tire Store
21. Rehabilitated	- Park Lithuania and housing
22. Rehabilitated	- Keele Street Public School and Community Centre
23. Rehabilitated	- Lambton Kingsway Park
24. Rehabilitated	- Norseman Heights Park
25. Rehabilitated	- Connorvale Park (north side) and inert fill area (south side)
26. Abandoned	- old quarry site filled with road and sidewalk debris
27. Rehabilitated	- Mimico Lakeshore Lawn Bowling Club, Mimico Centennial Library and housing
28. Rehabilitated	- Christie Brown and Company Limited
29. Rehabilitated	- parking area for Ontario Food Terminal
30. Rehabilitated	- apartment, commercial and residential buildings
31. Rehabilitated	- Rennie Park and Swansea Public School
32. Rehabilitated	- Bickford Ravine and Bickford High School
33. Rehabilitated	- Willowvale Park
34. Rehabilitated	- housing
35. Rehabilitated	- Ramsden Park, Public Works yard and apartment buildings
36. Rehabilitated	- apartment buildings
37. Rehabilitated	- Eglinton park and housing along the edge
38. Rehabilitated	- residential development built around a landscaped and naturally revegetated pit
39. Rehabilitated	- Lytton Park and housing along the edge
40. Rehabilitated	- residential buildings
41. Rehabilitated	- York Mills Centre
42. Rehabilitated	- Roehampton Park
43. Rehabilitated	- Leaside High School and Howard Talbot Park
44. Rehabilitated	- used to be Sun Brickyard; area is sloped and revegetated
45. Licensed	- Metropolitan Toronto and Region Conservation Authority; non-producing
46. Rehabilitated	- sloped and seeded area next to Don Valley Parkway
47. Rehabilitated	- Riverdale Park
48. Rehabilitated	- housing

49. Rehabilitated	- Eastview Neighbourhood Community Centre and Eastview Park
50. Rehabilitated	- Toronto Transit Commission's Greenwood subway yards
51. Rehabilitated	- Felstead Park
52. Rehabilitated	- recreation area behind Saint Patrick Catholic Secondary School
53. Rehabilitated	- housing
54. Rehabilitated	- Greenwood Park
55. Rehabilitated	- Havenbrook Park
56. Rehabilitated	- Adam Beck Public School
57. Rehabilitated	- Neil McNeil School, housing and shopping mall
58. Rehabilitated	- Blantyre Public School
59. Rehabilitated	- housing
60. Rehabilitated	- Blantyre Park
61. Abandoned	- almost entirely naturally revegetated old pit
62. Rehabilitated	- housing
63. Rehabilitated	- Birch Cliff Public School
64. Rehabilitated	- Taylor Creek Park and apartment buildings
65. Rehabilitated	- George Webster Public School and housing
66. Abandoned	- some natural revegetation and landscaping; potential site for a senior citizen complex
67. Rehabilitated	- West Hill Playfield and housing subdivision
68. Abandoned	- naturally revegetated
69. Rehabilitated	- apartment buildings
70. Abandoned	- naturally revegetated
71. Rehabilitated	- former landfill operation site and Military Trail Park
72. Rehabilitated	- former landfill operation site
73. Rehabilitated	- Morningside Business Park
74. Rehabilitated	- naturally revegetated
75. Industrial	- Miller Paving Limited and McAsphalt Industries Limited
76. Abandoned	- naturally revegetated; trail by the Rouge River
77. Abandoned	- naturally revegetated
78. Rehabilitated	- parking for Metropolitan Toronto Zoo
79. Rehabilitated	- parking for Metropolitan Toronto Zoo
80. Rehabilitated	- Beare sanitary landfill site
81. Rehabilitated	- Beare sanitary landfill site
82. Abandoned	- naturally revegetated

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